

**WEST**

Generate Collection

L2: Entry 43 of 88

File: USPT

Mar 16, 1999

DOCUMENT-IDENTIFIER: US 5883635 A

TITLE: Producing a single-image view of a multi-image table using graphical representations of the table data

## BSPR:

A familiar and effective information presentation form for certain types of structured information is that of an image of a table, also referred to herein as a "table image". As used herein, a "table" is an orderly, rectilinear arrangement of information, typically but not necessarily, ordered in a rectangular form of rows and columns and having identifiers, such as labels, arranged at the periphery of the table. The intersection of a row and column in a table defines a data location, typically called a "cell", and may include alphabetic and numeric character data or arithmetic operators or formulas. A table is distinguishable from various types of graphs which do not have all of the characteristics of the orderly, rectilinear arrangement of information found in a table. A popular application of a table image is the "spreadsheet", the information presentation format used by a computer-implemented spreadsheet application program that presents tabular image of underlying data stored in the memory of a system, and that provides a system user with access to the stored data via the manipulation of the character display features that visually represent the underlying data presented in the cells of the spreadsheet. Table images also may be used in a wide variety of application program contexts where the information structure includes linear elements and is organized in, or is capable of being organized in, an n-dimensional "array data structure".

## BSPR:

Baker et al. in U.S. Pat. No. 5,226,118 discloses a data analysis computer system capable of storing measurement data from plural measured processes and definitions for many data analysis charts. There is further disclosed a data display gallery feature which divides the computer system's display into a two dimensional array of cells, called a graphical spreadsheet or gallery, having cell definitions assigned to at least a subset of the cells. Each cell definition consists of either a set of measurement data which can be displayed as a unit, or a mathematical combination of a plurality of specified sets of measurement data. Typically each displayed cell contains a data map depicting a set of data in accordance with a corresponding cell definition. Each cell in the gallery is a graphic image representing an independent data analysis unit, and data points for each cell are selected by the user from currently displayed control or trend chart, allowing visual comparison of plural data maps. Since each cell is independent from other displayed cells, the user of the system may assign each cell a different type of display or data analysis function using data mapping and data analysis menus. If the number of cells in the gallery exceeds the number that can be viewed at any one time, the vertical and horizontal scroll bars on the edges of the gallery display can be used to scroll the display so as to bring any particular cell into view. Thus, the graphical spreadsheet disclosed by Baker may not display all of the available data in one display area or workspace, and is not a spreadsheet, or table of data showing interrelated information by rows and columns in the more commonly understood sense.

## BSPR:

These examples of information presentation techniques do not address, either individually or in combination, the particular problems associated with processor-controlled systems designed for effectively presenting information suited for display in a two-dimensional (2D) table or spreadsheet image structure where the positional relationship of data arranged by rows and columns conveys information about the data, and where the presentation of all of the detail contained in the sets of related information arranged in a row or column is necessary for a system user to accurately access the data in the underlying data structure via interaction with the image. The "fisheye" techniques as applied to

a rectangular image such as a calendar do not adequately address the general problem of the presentation of the data in the non-focus areas. The 3D Perspective Wall requires specialized processing hardware, and may be unsuited for the display of interrelated table data, where 3D distortion of cell region sizes may detract from information understanding. The graphical spreadsheet disclosed in Baker et al. is not actually suited for the type of interrelated data organization typically intended for display in table form, since each cell is independent from the others. The graphical mapping techniques disclosed in Bertin do not address the issues of simultaneously presenting both the global and local context of the interrelated information presented in a table image. Many of these information presentation examples do not provide mechanisms for shifting between the global and focus modes, and for efficiently navigating through, a table image to rapidly locate data of interest. Moreover, none of these examples of information presentation techniques address the problem of effectively displaying table images that are too large to fit in the display area while simultaneously providing a system user with efficient access to data in individual cells.

**BSPR:**

The method and system of the present invention address the above-described deficiencies of existing examples of information presentation techniques specifically for the domain of information structured in an n-dimensional (nD) data array that is suitable for display in a table or spreadsheet image structure where the positional relationship of data arranged by rows and columns conveys information about the data, and where the presentation of all of the detail contained in the sets of related information arranged in a row or column is necessary for a system user to accurately access the data in the underlying information data structure via interaction with the image. The method and system address the problem of providing a general presentation method for the data in non-focal regions by making use of a novel graphical mapping technique for presenting a table image representing an information data structure utilizing graphic images in the data cells in place of and as representative of respectively paired non-graphical data in the information data structure. This graphical mapping technique provides a powerful mechanism for visually inspecting patterns and trends in the underlying data.

**BSPR:**

The present invention also provides an improvement to a processor-based system including a memory having instructions stored therein indicating instructions for a spreadsheet application program the processor executes, and including a display device having a display area for presenting an image of a spreadsheet having a plurality of cells arranged in a plurality of rows and columns, each of the cells including an image of character (non-graphical) information representing a respectively paired one of a plurality of data items stored in a data array in the memory of the system, each data item indicating character (non-graphical) information. In the improvement to the system the processor, in executing the instructions, replaces each character information image included in one of the respective cells with a graphical display object image including first and second display features representing respectively a cell presentation type and a data value of the respectively paired data item stored in the memory of the system.

**BSPR:**

In accordance with another aspect of the improvement of the present invention, when the image of the spreadsheet produced using the plurality of data items stored in the memory of the system cannot be completely displayed in the display area using the images of character information representing respectively paired ones of the plurality of data items, the processor further determines a new cell size for each of the plurality of cells displayed in the image of the spreadsheet using the size of the display area and a number of cells of a complete spreadsheet image. The processor then produces the graphical display object image including the first and second display features for each respective cell according to the new cell size for the respective cell, and displays the complete spreadsheet image in the display area using the new cell size and including the graphical display object image in each cell.

**DEPR:**

Similarly, the data structure provided in a conventional spreadsheet program may supply the source data items from which table image 10 is constructed. Typically, a spreadsheet data structure includes row and column identifier information, data

type information, and table image layout information as well as the source data values for the cell contents. Source data items in a typical spreadsheet may include equations, and a cell presentation type for such cells may either graphically represent the source data value computed from the equation, or the equation itself.

DEPR:

FIG. 6 illustrates still another aspect of the method of the present invention that is useful when integrating the present method into an existing spreadsheet or relational data base application or the like where conventional table images, showing directly represented data, are displayed. In method 204, a conventional first table image is displayed in box 220. A system user uses an input device to produce signals indicating an image display request to display table image 10. In method 204, table image 10 includes cell regions for indirectly representing every source data item in the underlying nD data array 810 of the application. In response to the image display request by the system user, image definition data is produced, in box 320, defining a second table image having graphical display objects in the cell regions as indirect representations of the respectively paired source data items in the underlying data structure such that all cell regions are displayable in one image. Method 204 provides the system user of a conventional spreadsheet or relational data base program with the ability to compress an entire table that may require several table images to view by conventional scrolling or paging techniques into a single table image and to view the data in graphical form. The graphical view provides the ability to see patterns and trends in the data more easily and viewing the entire table in one image permits easier location of information of interest to the system user.

DEPR:

Conventional table image processing applications, especially spreadsheet applications, typically provide roughly uniform amounts of display space for individual cells in the rows and columns. The amount of space for each cell is constrained by factors such as the space needed to adequately represent the data value of a respectively paired source data item and the total space available in the display area or workspace. The table layout, including the size of the cell regions, is often predefined and may not be easily varied by a system user. Roughly uniform cell regions provide few visual clues for quickly locating a particular cell region in the table image. In the case of a large table that occupies most of the display area, the area of each cell region may be necessarily computed to be small, and a system user may find the data representation in one or more cell regions of particular interest difficult to locate, access, read or understand.

DEPR:

The method of the present invention is particularly suited for producing table images representing large bodies of data. In conventional table-processing applications such as spreadsheet applications, the data in a very large data array cannot be completely represented in one image, and various techniques are provided to the system user to gain access to data in portions of the spreadsheet or table image that are not currently visible in the display area. Techniques such as scrolling through a table image to bring new cells into the display area or paging through multiple images require excessive amounts of time, and may result in the loss of column and row identifiers that provide navigational clues for efficiently locating a desired item of data.

DEPR:

In a simple computation it can be shown that, in a spreadsheet having individual cells of 100 pixels by 15 pixels, a maximum of 660 cells can be displayed on a 19-inch display. Graph 50 in FIG. 13 shows the advance in the size of a table image as more cells become context cells and use an indirect graphical method for representing the underlying source data. The y axis 52 shows the 660 cells computed for a typical 19-inch display. Grey strip 54 shows the displayable regions of typical spreadsheet where all cells are focal, containing a direct representation of the underlying data. Line 56 shows the progressive advancement in the number of displayable cells as more cells are converted from focal to non-focal. It can be seen from graph 50 that the method of the present invention can show about 68,400 cells in a single table image, or over two orders of magnitude more cells than in a conventional spreadsheet table image.

**WEST**☐ Generate Collection

L4: Entry 3 of 45

File: USPT

Apr 3, 2001

DOCUMENT-IDENTIFIER: US 6212577 B1

TITLE: Method and apparatus for improved interaction with an application program according to data types and actions performed by the application program

## DEPR:

Another feature provided by the preferred embodiment is destination feedback. The user is provided with visual feedback for the destination where the information will be dropped. This is illustrated with reference to FIGS. 16-19b. When dragging takes place, especially into discrete windows such as illustrated in FIG. 16, if the window (e.g., 1620) can accept the dragged item, then a single-pixel highlight inset 1610 is displayed when the window is the current location of the cursor. Another example is illustrated in FIG. 17. For example, the user may be selecting text 1702 in window 1701 for dragging to a second window 1704. When the cursor enters the region of window 1704, a highlight inset 1710 is displayed if the window can receive the dragged information. This provides feedback to the user that information 1702 may be dragged to that location (the application program controlling 1704 can accept the text information). While cursor 1700 resides within the domain of window 1704, the inset highlighting 1710 is displayed. The preferred embodiment also provides feedback for subwindows and other user interface objects, such as icons, spreadsheet cells, and other objects which are under control of an application program, have a similar single-pixel inset highlighting to provide additional feedback to the user, even when interapplication dragging is taking place. This is illustrated with reference to FIGS. 18a and 18b.

## DEPR:

For instance, an electronic mail application may be controlling the window shown as 1810 in FIG. 18a. For example, in the electronic mailer window 1810 illustrated in FIG. 18a, the user may desire to select such an item as an electronic mail address to place into "To" field 1820. In this instance, when cursor 1800 enters "To" field 1820, then a single-pixel inset 1825 is displayed within the "To" field to indicate that that field is capable of receiving the electronic mail address information or other information which is selected and dragged as icon 1830. Similarly, as is illustrated in window 1850 of FIG. 18b, selected data 1860 may be dropped into the worksheet cell of a spreadsheet displayed in window 1850, as is illustrated by the highlighting provided as 1870 in window 1850. In either event, destination highlighting may be provided for various subwindows, icons, fields, or other discrete user interface objects in the preferred embodiment when interapplication dragging is taking place to provide positive feedback to the user. The mechanics of this will be discussed in more detail below with reference to tracking handlers during the drag and the tracking of the drag through various windows or other areas on a computer system display.

# WEST

☐ **Generate Collection**

L4: Entry 1 of 45

File: USPT

Sep 4, 2001

DOCUMENT-IDENTIFIER: US 6286017 B1

TITLE: Graphical environment for managing and developing applications

**BSPR:**

The above application building and sharing environment may further include means for associating and displaying with the module icon, of a program module from above collection, icons representing user selected variables within the program module specification. This feature may be provided by associating a control icon, usually a button, with a specific variable in the program specification. Then means for allowing a user to access the full value of the variable, associated to the control icon, may be provided by executing, upon request, the program parts needed to define the variable and when the variable value has been determined the full value is displayed. Since, for non-constants, the value of a variable in a module is only defined when the input variables are defined, this assumes that the system has available input values for the module. A suitable way is to store, for each user, the input values used in the last execution of the module or a set of default input values. In a spreadsheet system this is always the case, i.e., values are not removed from the cells after execution of the program.

**DEPR:**

FIG. 7 shows the data flow specifications 301 between parent module 302 and a single child module (702). Data flow specifications 301 is represented in a spreadsheet like cell format (701) by denoting the rows in 701 by input variables 203 (denoted by i'1, i'2, . . . ) and output variables (denoted by o'1, o'2, . . . ) 204 from interface part 205 of module 702. Columns are denoted by call variables (denoted by c1, c2, . . . ) in such a way that each column c1, c2, . . . corresponds to a call to child module 702 with input values in rows i'1, i'2, . . . and results shown in rows o'1, o'2 . . . if the user chooses to view results at the same time as specifying data flow 301. Values passed back and forth through relationship 301 are of a general type determined by the programming language in which program specification 209 of module 302 is specified in and the values are embedded into cell format by methods described by flow chart 901. An alias (denoted by A in 701) is assigned to the relationship between parent module 302 and child module 702. Variables (denoted by A:c1:i'1, . . . , A:c2:o'2, . . . ) in cell format 701 are made available to specification 209 of module 302. Each parent-child relationship of module 302 is assigned a user editable flow specification similar to 701 and in this way call definition part 207 of module 302 is replaced by a spreadsheet like environment. Methods for accessing the data flow specifications between parent modules and child modules are attached to icons (e.g. 403) between the modules.

**DEPR:**

FIG. 8 provides an overview over how in the present invention each part of program specification 209 is represented graphically or in cell format replacing the need for a text specification defining 209. Module 302 is represented by icon 401 and time axis 406 to specify version as indicated by line 801 and explained in FIG. 4. Call declarations 206 for module 302 are represented by modular structure diagram 405 as indicated by 802 and explained in FIG. 4 also. Interface part 205 of module 302 is represented by cell format 501 for input declarations 203 and by cell format 502 for output declarations 204 as indicated by lines 804 and 805 respectively and explained in FIG. 5. Program statements 208 of module 302 are represented by, spreadsheet like, cell format 503, as indicated by line 806, or by text format 602 and explained in FIG. 5 and FIG. 6 respectively. Call definitions 207 of module 302 defining the data flow between modules are represented by sheets of cell format 701 one sheet for each relationship in modular structure diagram 405 as is explained in FIG. 7 and indicated by line 803. Interface part 205 of module 302 defines how other modules can access module 302 and in particular can be considered a interface into external applications 201 of module 302 or more generally a interface into a process which combines

information from all modules in modular structure diagram 405 and connected external applications if present. Type definitions of variables used in input-203, output-204, call definitions 207 and program statements 208 are associated to their corresponding cells in the cell format

DEPR:

In the preferred embodiment all definitions of modules, representations, users, and icons are stored in a centrally located database (in data storage 103) accessible to all users. Users share access to modules by placing icons (e.g. 401) in a folder directory structure, also stored in the database, defining access rights of other users and associating a description of the module to the icon for clarity. This enables the sharing of components between users of the system (e.g. network) having different programming skills, including users with only knowledge of spreadsheet systems, since data flow between modules can be defined using cell format (e.g. 701) and a runtime environment is defined by a cell format also (e.g. 501 and 502). In order to access a particular module, the user, using input devices 105, selects it from its folder, shown on a display device, and places it in a modular structure diagram describing a new application or activates it (e.g. runtime environment 504). In the preferred embodiment, compiling of modules is done relative to cells viewed at each moment on the display device used and all changes in underlying structures are reflected immediately. Users are warned and informed about how changes in module definitions affect other modules and have the option of using time axis to leave parent-child relationships unchanged. The usage of time axis allows existing modules to function unchanged when modules are upgraded.

DEPR:

FIG. 9 shows flow chart (901) describing a method for displaying a variable value of a general type in a cell in such a way that extends the way mathematical formulas with number values and text is viewed in cells. A variable--or a cell value, can be considered an array holding information about the value as determined by the variable type and the variable definition. The value array is associated to the cell holding the variable/cell definition. Information in the variable/cell value array is entered into the array by a program execution mechanism which updates the value array to reflect changes in other related variables/cells or in the variable/cell definition itself. One type of the information in the array is the variable type. The program execution mechanism also triggers the display mechanism to change the displayed value of the cell. Values considered are of general types such as a number, formula, array, geometrical object, form, database, table or a row type as determined by the programming language. A variable of a text or number type is displayed in a cell by its formatted value. The same applies to some other types such as date and time. In preferred embodiments, values of more general types are displayed in cells by applying a function, called indication function here, to the value array which specifies a method, based on the value type, for determining the displayed cell value of the variable. The resulting displayed cell value is a combination of text and icons fitting into a cell. The icons are selected from an icon font and combined with the text to form the cell display. Attributes such as color can be applied to the cells in a standard way. An example of such a function is an indication function which assigns to a variable an icon, representing the variable type, and concatenates to the icon a keyword selected from the information about the variable in the variable array. A value resulting from applying the indication function to a variable is referred to as the indication value of the variable. The variable array is not displayed but is associated to the cell. As is standard with spreadsheets, a syntax error in the definition of a variable is indicated with an error flag in the cell. Flow chart 1201 describes a method for viewing a variable of a general type in another way namely by its full value.

**WEST**

Generate Collection

L2: Entry 32 of 37

File: USPT

Jun 30, 1998

DOCUMENT-IDENTIFIER: US 5774664 A

TITLE: Enhanced video programming system and method for incorporating and displaying retrieved integrated internet information segments

## DEPR:

It is understood that there can exist alternative embodiments for use with the present invention. For example, the user can view the interactive program using a television set 114 or other display monitor in conjunction with the display screen of the personal computer 16. In this embodiment, the relevant Web pages are shown on the personal computer 16 while the video program is displayed on the television monitor 114. In this alternative embodiment, a cable set top box receives the television program from the multichannel cable. The personal computer 16 also receives the video program from the multi-channel cable and extracts the URLs, embedded in the vertical blanking interval of the video signal or directly transmitted 94 over the Internet 20. The client software 106 extracts the URLs and retrieves the particular Web pages as described above. The Web pages are then synchronized with the particular video frames and presented to the user. It is understood that a hyperlink may exist on the Web site that will allow the user to automatically load the client software and call up the specific television channel referenced in the Web site. For example, someone browsing the Internet 20 may come upon a major television network's Web site. They scroll to an interesting story then click on an hyperlink to turn on the software which tunes the TV window to the network to enhance the information residing at the Web site.

**WEST**

Generate Collection

L2: Entry 26 of 37

File: USPT

May 11, 1999

DOCUMENT-IDENTIFIER: US 5903816 A

TITLE: Interactive television system and method for displaying web-like stills with hyperlinks

## ABPL:

A system and method for displaying still video images related to video content in an interactive broadcast television system. The system and method of the present invention may also be used for simulating an Internet home page on an interactive television system. The present invention thus supports hyperlinked web-like navigational capabilities in an interactive television system. According to the method of the present invention, the video delivery system provides or broadcasts one or more audio/video channels each comprising video content and also provides or broadcasts at least one still image channel comprising a plurality of still video images, preferably MPEG-2 compressed still images. The user or viewer can select options displayed on the television screen to view desired information. When the set top box receives user input selecting an option to view one of the linked still images, the set top box captures the requested image from the still image broadcast channel, stores the image in memory, and displays the captured still video image corresponding to the selection. The still image being displayed may have associated interactive program content for displaying further selections, wherein these selections may be for viewing other images or content, for ordering information, or purchasing products. The user can thus selectively navigate between the video content and stills in a web-like hyperlinked fashion. In one embodiment, when a user is navigating through still images, the television program or video content which was being viewed is displayed in a small window overlaid on the still image being displayed. Also, when the set top box captures a requested image from the still image broadcast channel, the set top box preferably also pre-caches or pre-loads other related still images based on the probability that these related images will be subsequently requested by the user. The invention also includes an embodiment which provides user requested still images "on demand" on a dedicated "search" channel.

## DEPR:

In one embodiment, the video program content of the AVI signal, i.e., the television content on the channel being watched, is displayed in an inset window of the still image displayed in step 434. In addition, or alternatively, the audio from the AVI signal or television program is presented with the still image. This allows a continuous television program presence to be maintained while the user is navigating through the web-like stills.



**WEST**☐ Generate Collection

L5: Entry 1 of 7

File: USPT

Aug 14, 2001

DOCUMENT-IDENTIFIER: US 6275989 B1

TITLE: Interactive television system and method for displaying web-like stills with hyperlinks

## ABPL:

A system and method for displaying still video images related to video content in an interactive broadcast television system. The system and method of the present invention may also be used for simulating an Internet home page on an interactive television system. The present invention thus supports hyperlinked web-like navigational capabilities in an interactive television system. According to the method of the present invention, the video delivery system provides or broadcasts one or more audio/video channels each comprising video content and also provides or broadcasts at least one still image channel comprising a plurality of still video images, preferably MPEG-2 compressed still images. The user or viewer can select options displayed on the television screen to view desired information. When the set top box receives user input selecting an option to view one of the linked still images, the set top box captures the requested image from the still image broadcast channel, stores the image in memory, and displays the captured still video image corresponding to the selection. The still image being displayed may have associated interactive program content for displaying further selections, wherein these selections may be for viewing other images or content, for ordering information, or purchasing products. The user can thus selectively navigate between the video content and stills in a web-like hyperlinked fashion. In one embodiment, when a user is navigating through still images, the television program or video content which was being viewed is displayed in a small window overlaid on the still image being displayed. Also, when the set top box captures a requested image from the still image broadcast channel, the set top box preferably also pre-caches or pre-loads other related still images based on the probability that these related images will be subsequently requested by the user. The invention also includes an embodiment which provides user requested still images "on demand" on a dedicated "search channel".

**WEST**

Generate Collection

L5: Entry 3 of 7

File: USPT

Jan 25, 2000

DOCUMENT-IDENTIFIER: US 6018768 A

TITLE: Enhanced video programming system and method for incorporating and displaying retrieved integrated internet information segments

## DEPR:

It is understood that there can exist alternative embodiments for use with the present invention. For example, the user can view the interactive program using a television set 114 or other display monitor in conjunction with the display screen of the personal computer 16. In this embodiment, the relevant Web pages are shown on the personal computer 16 while the video program is displayed on the television monitor 114. In this alternative embodiment, a cable set top box receives the television program from the multichannel cable. The personal computer 16 also receives the video program from the multi-channel cable and extracts the URLs, embedded in the vertical blanking interval of the video signal or directly transmitted 94 over the Internet 20. The client software 106 extracts the URLs and retrieves the particular Web pages as described above. The Web pages are then synchronized with the particular video frames and presented to the user. It is understood that a hyperlink may exist on the Web site that will allow the user to automatically load the client software and call up the specific television channel referenced in the Web site. For example, someone browsing the Internet 20 may come upon a major television network's Web site. They scroll to an interesting story then click on an hyperlink to turn on the software which tunes the TV window to the network to enhance the information residing at the Web site.

**WEST**

Generate Collection

L5: Entry 4 of 7

File: USPT

May 11, 1999

DOCUMENT-IDENTIFIER: US 5903816 A

TITLE: Interactive television system and method for displaying web-like stills with hyperlinks

## ABPL:

A system and method for displaying still video images related to video content in an interactive broadcast television system. The system and method of the present invention may also be used for simulating an Internet home page on an interactive television system. The present invention thus supports hyperlinked web-like navigational capabilities in an interactive television system. According to the method of the present invention, the video delivery system provides or broadcasts one or more audio/video channels each comprising video content and also provides or broadcasts at least one still image channel comprising a plurality of still video images, preferably MPEG-2 compressed still images. The user or viewer can select options displayed on the television screen to view desired information. When the set top box receives user input selecting an option to view one of the linked still images, the set top box captures the requested image from the still image broadcast channel, stores the image in memory, and displays the captured still video image corresponding to the selection. The still image being displayed may have associated interactive program content for displaying further selections, wherein these selections may be for viewing other images or content, for ordering information, or purchasing products. The user can thus selectively navigate between the video content and stills in a web-like hyperlinked fashion. In one embodiment, when a user is navigating through still images, the television program or video content which was being viewed is displayed in a small window overlaid on the still image being displayed. Also, when the set top box captures a requested image from the still image broadcast channel, the set top box preferably also pre-caches or pre-loads other related still images based on the probability that these related images will be subsequently requested by the user. The invention also includes an embodiment which provides user requested still images "on demand" on a dedicated "search" channel.

**WEST**

Generate Collection

L5: Entry 4 of 7

File: USPT

May 11, 1999

DOCUMENT-IDENTIFIER: US 5903816 A

TITLE: Interactive television system and method for displaying web-like stills with hyperlinks

## ABPL:

A system and method for displaying still video images related to video content in an interactive broadcast television system. The system and method of the present invention may also be used for simulating an Internet home page on an interactive television system. The present invention thus supports hyperlinked web-like navigational capabilities in an interactive television system. According to the method of the present invention, the video delivery system provides or broadcasts one or more audio/video channels each comprising video content and also provides or broadcasts at least one still image channel comprising a plurality of still video images, preferably MPEG-2 compressed still images. The user or viewer can select options displayed on the television screen to view desired information. When the set top box receives user input selecting an option to view one of the linked still images, the set top box captures the requested image from the still image broadcast channel, stores the image in memory, and displays the captured still video image corresponding to the selection. The still image being displayed may have associated interactive program content for displaying further selections, wherein these selections may be for viewing other images or content, for ordering information, or purchasing products. The user can thus selectively navigate between the video content and stills in a web-like hyperlinked fashion. In one embodiment, when a user is navigating through still images, the television program or video content which was being viewed is displayed in a small window overlaid on the still image being displayed. Also, when the set top box captures a requested image from the still image broadcast channel, the set top box preferably also pre-caches or pre-loads other related still images based on the probability that these related images will be subsequently requested by the user. The invention also includes an embodiment which provides user requested still images "on demand" on a dedicated "search channel".

**WEST**

Generate Collection

L2: Entry 23 of 37

File: USPT

Aug 31, 1999

DOCUMENT-IDENTIFIER: US 5945988 A

TITLE: Method and apparatus for automatically determining and dynamically updating user preferences in an entertainment system

## DEPR:

Having determined which user of a plurality of users is currently using system 100 in step 204, system controller 104 dynamically configures system configuration settings of system 100 in accordance with the user preference information found in the user profile corresponding to the identified user. Referring to FIG. 7, depicted therein is one example of user profile database 700. In the illustrated embodiment of FIG. 7, user profile database 700 contains information (user preference information) associated with each of the different media supported in system 100. For example, in the illustrated embodiment of FIG. 7, user profile database 700 includes user preference information related to a television/monitor, a personal computer and audio components. As depicted, for television/monitor 102, user profile database 700 tracks user preferred channels, volume, program genre information, whether to block content information, and whether supplemental programming is requested with a particular channel. In the illustrated embodiment, for example, user profile database 700 includes a profile for the fictitious "Joe User". As illustrated, Joe User's favorite television channel is channel 2, which he enjoys viewing at a moderate volume; he prefers watching sports-type programming, no blocking is required, nor is any supplemental programming requested. With respect to channel 7, Joe enjoys watching movies available on this channel, at low volume, and he wishes to block violent movies. With respect to channel 11, Joe enjoys watching this station for its news coverage, at moderate volume, without the need for blocking, and Joe desires a "window" to be displayed on the television/monitor in which supplemental programming related to stock quotes are to be presented. In one embodiment, system controller 104 retrieves specific stock quotes customized to Joe's portfolio. In one implementation, system controller 104 retrieves the specific stock quotes from a predetermined world wide web site on the Internet via telephone/network interface 128. In an alternate implementation, system controller 104 retrieves general stock quote information from one of the broadcast network television channels. One skilled in the art will appreciate that in one embodiment, user profile database 700 may be stored locally in a storage medium found in system controller 104, while in alternate embodiments user profile database 700 may be stored remotely and accessed by system controller 104 through one of the many input ports of system controller 104.